

permeabilities are structured to provide at least two different dewatering speeds.

53. The tissue paper former in accordance with claim 39, wherein said zones of different wire permeabilities are formed by warp and weft threads.

54. The tissue paper former in accordance with claim 39, wherein said zones of different wire permeabilities are structured to provide at least two different dewatering speeds.

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**REMARKS**

***Summary of the Amendment***

Upon entry of the above amendment, claims 1, 2, 7, 16 - 20, 22, 23, 28, 32 - 39, 41, and 43 will have been amended and new claims 49 - 54 will have been entered for consideration by the Examiner. Accordingly, claims 1 - 54 are currently pending.

***Summary of the Official Action***

In the instant Office Action, the Examiner has rejected claims 1 - 48 based upon formal matters and over the art of record. By the present amendment and remarks, Applicant submits that the rejections have been overcome, and respectfully request reconsideration of the outstanding Office Action and allowance of the present application.

***Traversal of Rejection Under 35 U.S.C. § 112, Second Paragraph***

Applicant traverses the rejection of claims 1 - 48 under 35 U.S.C. § 112, second paragraph, as being indefinite.

In particular, the Examiner asserts that the claims merely recite structural elements

without necessary connecting structure. While acknowledging that the recited structural features are not recited in an interconnecting manner, Applicant submits that this does not render the pending claims unclear, since each claim term is recited in clear and unambiguous terminology.

Thus, it appears that the Examiner's objection is based, not upon the clarity of the claims, but upon the breadth of the claims, which is an improper application of 35 U.S.C. § 112, second paragraph. Simply put, if the claims are believed to be overly broad, and the Examiner believes additional structure should be recited, the proper rejection would be anticipation or obviousness rejections over the art of record, not 35 U.S.C. § 112, second paragraph.

With regard to the clarity of the claims, Applicant submits that the claims clearly and unambiguously set forth the subject matter that the Applicant regards as his invention. In particular, the instant invention is directed to, e.g., a machine that includes a forming area with at least one rotating dewatering wire with zonally varied wire permeability and at least one press shoe. To alleviate any potential confusion over the term "zonally varied wire permeability," which is defined and utilized throughout the specification, Applicant notes that the zonally variable permeability of the dewatering wire refers to a wire including zones having different permeabilities. Accordingly, the specification has been amended to parenthetically indicate that zonally variable permeability refers to zonally different permeability.

Support for this amendment is found throughout the specification and drawings.

Thus, Applicant submits that the pending claims clearly set forth the subject matter of the instant invention, and request that the Examiner reconsider and withdraw the rejection of claims 1 - 48 under 35 U.S.C. § 112, second paragraph, and indicate that these claims are fully in compliance with the requirements of the statute.

***Traversal of Rejection Under 35 U.S.C. § 102(b)/(e) / 35 U.S.C. § 103(a)***

Applicant traverses the rejection of claims 1 - 48 under 35 U.S.C. § 102(b/e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being unpatentable over SCHIEL (U.S. Patent No. 6,004,429) or EDWARDS et al. (U.S. Patent No. 6,287,426) [hereinafter “EDWARDS”]. The Examiner asserts that SCHIEL and EDWARDS show all of the recited features, but that, to the extent that a wire with zonally varied permeability is not shown, it would have been obvious to modify these systems to utilize such a known wire such as disclosed in PCT/GB99/02684. Applicant traverses the Examiner’s assertions.

Applicant’s independent claim 1 recites, *inter alia*, a forming area including at least one rotating continuous *dewatering wire with a plurality of zones having different wire permeabilities*, and *at least one shoe press*. Independent claim 22 recites, *inter alia*, dewatering the tissue web with at least the at least one continuous *dewatering wire with said plurality of zones having different wire permeabilities*, and *pressing* the tissue web in the at least one shoe press. Applicant’s independent claim 39 recites, *inter alia*, a forming element, at least two rotating continuous dewatering wires, in which *at least one of said two rotating*

*continuous dewatering wires has a plurality of zones with different wire permeabilities, arranged over said forming element, as an outer wire not in contact with said forming element and as an inner wire, and at least one shoe press arranged downstream, relative to a wire travel direction, from said forming element.* Applicant submits that neither SCHIEL nor EDWARDS disclose or suggest at least the above-noted features.

Applicant notes that, while both SCHIEL and EDWARDS disclose machines for forming tissue or creped webs, neither document provides any teaching or suggestion of a forming area that includes a continuous dewatering wire with a plurality of zones having different wire permeabilities. In fact, the applied art fails to provide any teaching or suggestion of the specific structure of the wire, and certainly no teaching or suggestion as to how the specific structure affects the physical characteristics of the resulting web.

As neither applied document discloses at least the above-noted features of the instant invention, Applicant submits that neither document teaches each and every recited feature. Accordingly, Applicant submits that the Examiner has failed to provide an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(b)/(e), and that the rejection is improper and should be withdrawn.

Further, Applicant notes that the instant invention provides an apparatus and process to improve physical characteristics of the web, e.g., water absorption capacity, water absorption rate, water retention capacity, specific volume, *see* Specification, paragraph [0004]. According to the instant invention, the above-noted physical properties of the web

are improved by a forming region having at least one circulating, continuous dewatering wire comprising at least two zones having different wire permeabilities and a press shoe located downstream of the forming region.

In contrast to the instant invention, Applicants note that neither SCHIEL nor EDWARDS provide any teaching or suggestion that physical characteristics of the resulting web can be improved by the structure of the dewatering wire. Because the art of record fails to provide any teaching or suggestion of utilizing a dewatering wire having a plurality of zones having different wire permeabilities, Applicant submits that the applied documents fail to teach or suggest the combination of features recited in at least independent claims 1, 22, and 39, and that the rejection under 35 U.S.C. § 103(a) is improper and should be withdrawn.

Thus, absent some other teaching in the art, Applicants submit that it would not have been obvious to one ordinarily skilled in the art to modify the structural features of the dewatering wires of SCHIEL or EDWARDS in any manner that would render the instant invention unpatentable.

In this regard, the Examiner has asserted that it would have been obvious to utilize the wire disclosed in International Publication No. WO 00/12817 (the published version of International Application No. PCT/GB99/02684) [hereinafter “WO ‘817”] in place of the dewatering wire SCHIEL or EDWARDS. Applicants submit that the asserted combination is merely the product of impermissible hindsight after reviewing Applicant’s disclosure, and that the applied art fails to provide any motivation or rationale for combining the documents

in the manner asserted by the Examiner.

In particular, Applicants note that, while WO '817 expressly discloses various belts or wires formed with various weave patterns, there is no teaching or suggestion that these various weave patterns form a plurality of zones having different wire permeabilities, as recited in at least Applicant's independent claims. In fact, Applicant submits that the disclosure in this document is limited only to the weave *pattern*, and there is no suggestion in the document that this pattern would result in a plurality of zones having different wire permeabilities. Further, Applicant notes that WO '817 fails to provide any teaching or suggestion of utilizing the dewatering wire in combination with a press shoe, as recited in at least Applicant's independent claims.

Moreover, Applicant notes that WO '817 discloses that the belt is utilized to form a *patterned web* (i.e., the visual appearance of the web), and that there is no teaching or suggestion in the applied document that the belt affects the *physical characteristics* of the web. In particular, WO '817 does not suggest another use or advantage of the patterned wire design.

Because neither SCHIEL nor EDWARDS provide any teaching or suggestion for forming a patterned web, Applicant submits that the art of record fails to provide any teaching or suggestion as to why one ordinarily skilled in the art would replace the dewatering wire with a wire intended to create a patterned web. Accordingly, Applicant submits that the art of record fails to provide the requisite motivation or rationale for

combining the documents in the manner asserted by the Examiner.

Applicants further note that, as the art fails to provide any teaching or suggestion that the identified zones of WO '817 have different wire permeabilities, the art of record fails to provide any teaching or suggestion for combining the art of record in any manner that would render the instant invention unpatentable.

Further, Applicant submits that claims 2 - 21, 23 - 38, and 40 - 48 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that neither SCHIEL nor EDWARDS, whether considered alone or in any proper combination with WO '817, anticipates or renders unpatentable, *inter alia*, a former including a forming element and two rotating continuous dewatering belts, said two rotating continuous dewatering belts being arranged to converge to form a stock entry gap and being conducted over said forming element as an outer belt, which does not contact said forming element, and as an inner belt, wherein at least one of said outer and said inner belts comprises said at least one rotating continuous dewatering wire with said plurality of zones having different wire permeabilities, as recited in claim 2; said forming element comprises a forming roll, as recited in claim 3; said shoe press comprises a separate unit arranged behind, in the belt travel direction, a unit including said forming element and said two dewatering belts, as recited in claim 4; the tissue web is carried by one of the two dewatering belts subsequent to said forming element, and the tissue web and said one dewatering belt is guided through said

shoe press, as recited in claim 5; said former comprises a twin wire former, as recited in claim 6; said former comprises a crescent former, and wherein said outer belt comprises said at least one dewatering wire with said plurality of zones having different wire permeabilities and said inner belt comprises a felt belt, as recited in claim 7; said shoe press comprises a shoe press unit and an opposing element, as recited in claim 8; said opposing element comprises a drying cylinder, as recited in claim 9; said opposing element comprises a Yankee cylinder, as recited in claim 10; said shoe press has a press nip length, viewed in a belt travel direction, less than or equal to about 60 mm and has a pressure profile over said press nip length with a maximum pressing pressure greater than or equal to about 3.3 MPa, as recited in claim 11; said shoe press has a press nip length, viewed in a belt travel direction, greater than about 80 mm and has a pressure profile over said press nip length with a maximum pressing pressure less than or equal to about 2 MPa, as recited in claim 12; said press nip length is less than about 200 mm, as recited in claim 13; said press nip length is a maximum of about 150 mm, as recited in claim 14; a drying zone in which the tissue web is acted upon at least partially by pressurized displacement gas, as recited in claim 15; said at least one dewatering wire with said plurality of zones having different wire permeabilities is located in an initial dewatering area, as recited in claim 16; said at least one dewatering wire with said plurality of zones having different wire permeabilities comprises a fabric formed by filling and warp yarns, as recited in claim 17; said at least one dewatering wire with said plurality of zones having different wire permeabilities comprises a fabric formed only by



filling and warp yarns, as recited in claim 18; zones of different wire permeability of said at least one dewatering wire are produced by at least one of weaving yarns of different diameter and different weave pattern, as recited in claim 19; a conditioning device assigned to said at least one dewatering wire with said plurality of zones having different wire permeabilities, as recited in claim 20; said conditioning device comprises a wire cleaning device, as recited in claim 21; the tissue machine further including a former with a forming element and two rotating continuous dewatering belts arranged to converge to form a stock entry gap and then guided over the forming element as an outer belt, which does not contact the forming element, and as an inner belt, such that at least one of said outer and said inner belts comprises said at least one rotating continuous dewatering wire with the plurality of zones having different wire permeabilities, and said process further comprises forming the tissue web between the inner and outer belts, and guiding the inner and outer belts and tissue web over the forming element, as recited in claim 23; the forming element comprises a forming roll, and said process further comprises guiding the inner and outer belts and the tissue web over the forming roll, as recited in claim 24; the shoe press is arranged as a separate from, and behind in a belt travel direction, a unit including the forming element and the two dewatering belts, as recited in claim 25; carrying, after the forming element and on one of the two dewatering belts, the tissue web, and guiding the tissue web and the one dewatering belt through the shoe press, as recited in claim 26; said former comprises a twin wire former, as recited in claim 27; said former comprises a crescent former, and the outer belt comprises

the at least one dewatering wire with the plurality of zones having different wire permeabilities, and the inner belt comprises a felt belt, as recited in claim 28; dewatering at a machine speed greater than about 1300 m/min, as recited in claim 29; dewatering at a machine speed greater than about 1500 m/min, as recited in claim 30; dewatering at a machine speed greater than about 1800 m/min, as recited in claim 31; dewatering the tissue web, in an initial dewatering area, with at least the at least one dewatering wire with the plurality of zones having different wire permeabilities, as recited in claim 32; the at least one dewatering wire with the plurality of zones having different wire permeabilities comprises a fabric formed by filling and warp yarns, as recited in claim 33; the at least one dewatering wire with the plurality of zones having different wire permeabilities comprises a fabric formed only by filling and warp yarns, as recited in claim 34; the at least one dewatering wire with the plurality of zones having different wire permeabilities comprises zones of different wire permeability formed by at least one of weaving yarns of different diameter and different weave pattern, as recited in claim 35; the at least one dewatering wire with the plurality of zones having different wire permeabilities is located in an area in which solids content of the tissue web is less than about 20%, as recited in claim 36; the at least one dewatering wire with the plurality of zones having different wire permeabilities is located in an area in which solids content of the tissue web is less than about 12%, as recited in claim 37; the at least one dewatering wire with the plurality of zones having different wire permeabilities is located in an initial sheet forming area having a solids content of less than about 6%, as recited in

claim 38; said forming element comprises a forming roll, as recited in claim 40; the at least one dewatering wire with said plurality of zones with different wire permeabilities comprises a plurality of zones in which each zone has a maximum extension of less than about 5 mm, as recited in claim 41; said maximum extension of each said zone is less than about 3 mm, as recited in claim 42; said former comprises a crescent former, and wherein said outer belt comprises said at least one dewatering wire with said plurality of zones with different wire permeabilities and said inner belt comprises a felt belt, as recited in claim 43; a suction zone located within a loop of said inner belt, and a conditioning device associated with said outer belt, as recited in claim 44; said suction zone is located in said forming roll, as recited in claim 45; an apparatus to one of control or regulate said suction zone, as recited in claim 46; said suction zone comprises at least two suction zones separated in a belt run direction, as recited in claim 47; and an apparatus to one of control or regulate said at least two suction zones, as recited in claim 48.

Applicant requests that the Examiner reconsider and withdraw the rejections of claims 1 - 48 under 35 U.S.C. § 102(b)/(e) / 35 U.S.C. § 103(a) and indicate that these claims are allowable.

***Newly Submitted Claims are Allowable***

Applicant submits that newly presented claims 49 - 54 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits

that neither SCHIEL nor EDWARDS, whether considered alone or in any proper combination with WO '817, anticipates or renders unpatentable, *inter alia*, said zones of different wire permeabilities are formed by warp and weft threads, as recited in claims 49, 51, and 53; and said zones of different wire permeabilities are structured to provide at least two different dewatering speeds, as recited in claims 50, 52, and 54.

Accordingly, Applicant requests that the Examiner consider the merits of newly submitted claims 49 - 54 and indicate that these claims are allowable in the next official communication.

***Application is Allowable***

Thus, Applicants respectfully submit that each and every pending claim of the present invention meets the requirements for patentability under 35 U.S.C. §§ 102 and 103, and respectfully request the Examiner to indicate allowance of each and every pending claim of the present invention.

***Authorization to Charge Deposit Account***

The Commissioner is authorized to charge to Deposit Account No. 19 - 0089 any necessary fees, including any extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, in order to maintain pendency of this application.

**CONCLUSION**

In view of the foregoing, it is submitted that none of the references of record, either

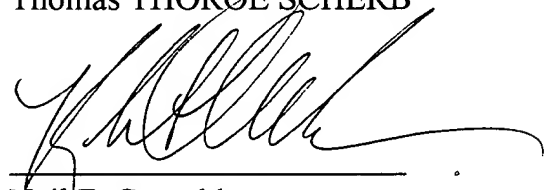
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taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 1 - 54. The claims have been amended to eliminate any arguable basis for rejection under 35 U.S.C. § 112. In addition, the applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Respectfully submitted,  
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**APPENDIX**

***Marked-Up Copies of the Amended Paragraphs:***

*Please replace paragraph [0005] with the following amended paragraph:*

**[0005]** With respect to the tissue machine, a feature according to the invention includes that at least one dewatering wire with zonally varied (different) wire permeability, i.e., a “DSP wire,” is provided in the forming area, as well as at least one shoe press.

***Marked-Up Copies of the Amended Claims:***

1. (Amended) A machine for producing a tissue web comprising:  
a forming area including at least one rotating continuous dewatering wire with [zonally varied] a plurality of zones having different wire [permeability] permeabilities; and  
at least one shoe press located downstream of said forming area, with respect to a web travel direction.
2. (Amended) The machine in accordance with claim 1, further comprising a former including a forming element and two rotating continuous dewatering belts;  
said two rotating continuous dewatering belts being arranged to converge to form a stock entry gap and being conducted over said forming element as an outer belt, which does not contact said forming element, and as an inner belt,  
wherein at least one of said outer and said inner belts comprises said at least one rotating continuous dewatering wire with [zonally varied] said plurality of zones having different wire [permeability] permeabilities.

7. (Amended) The machine in accordance with claim 2, wherein said former comprises a crescent former, and wherein said outer belt comprises said at least one dewatering wire with [zonally varied] said plurality of zones having different wire [permeability] permeabilities and said inner belt comprises a felt belt.

16. (Amended) The machine in accordance with claim 1, wherein said at least one dewatering wire with [zonally varied] said plurality of zones having different wire [permeability] permeabilities is located in an initial dewatering area.

17. (Amended) The machine in accordance with claim 1, wherein said at least one dewatering wire with [zonally varied] said plurality of zones having different wire [permeability] permeabilities comprises a fabric formed by filling and warp yarns.

18. (Amended) The machine in accordance with claim 17, wherein said at least one dewatering wire with [zonally varied] said plurality of zones having different wire [permeability] permeabilities comprises a fabric formed only by filling and warp yarns.

19. (Amended) The machine in accordance with claim 17, wherein zones of [varied] different wire permeability of said at least one dewatering wire are produced by at least one of weaving yarns of [varied] different diameter and [varied] different weave pattern.

20. (Amended) The machine in accordance with claim 1, further comprising a conditioning device assigned to said at least one dewatering wire with [zonally varied] said plurality of zones having different wire [permeability] permeabilities.

22. A process for producing a tissue web in a tissue machine having a forming area including at least one rotating continuous dewatering wire with [zonally varied] a plurality of zones having different wire [permeability] permeabilities and at least one shoe press, the process comprising:

dewatering the tissue web with at least the at least one continuous dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities; and

pressing the tissue web in the at least one shoe press downstream of the forming are.

23. (Amended) The process in accordance with claim 22, wherein the tissue machine further including a former with a forming element and two rotating continuous dewatering belts arranged to converge to form a stock entry gap and then guided over the forming element as an outer belt, which does not contact the forming element, and as an inner belt, such that at least one of said outer and said inner belts comprises said at least one rotating continuous dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities, and said process further comprises:

forming the tissue web between the inner and outer belts; and

guiding the inner and outer belts and tissue web over the forming element.

28. (Amended) The process in accordance with claim 23, wherein said former comprises a crescent former, and the outer belt comprises the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability]



permeabilities, and the inner belt comprises a felt belt.

32. (Amended) The process in accordance with claim 22, further comprising dewatering the tissue web, in an initial dewatering area, with at least the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities.

33. (Amended) The process in accordance with claim 22, wherein the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities comprises a fabric formed by filling and warp yarns.

34. (Amended) The process in accordance with claim 33, wherein the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities comprises a fabric formed only by filling and warp yarns.

35. (Amended) The process in accordance with claim 22, wherein the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities comprises zones of [varied] different wire permeability formed by at least one of weaving yarns of [varied] different diameter and [varied] different weave pattern.

36. (Amended) The process in accordance with claim 22, wherein the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities is located in an area in which solids content of the tissue web is less than about 20%.

37. (Amended) The process in accordance with claim 36, wherein the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities is located in an area in which solids content of the tissue web is less than about 12%.

38. (Amended) The process in accordance with claim 36, wherein the at least one dewatering wire with [zonally varied] the plurality of zones having different wire [permeability] permeabilities is located in an initial sheet forming area having a solids content of less than about 6%.

39. (Amended) An tissue paper former comprising:  
a forming element;  
at least two rotating continuous dewatering wires, in which at least one of said two rotating continuous dewatering wires has a [zonally varied] plurality of zones with different wire [permeability] permeabilities, arranged over said forming element, as an outer wire not in contact with said forming element and as an inner wire; and  
at least one shoe press arranged downstream, relative to a wire travel direction, from said forming element.

41. (Amended) The tissue paper former in accordance with claim 40, wherein the at least one dewatering wire with [zonally varied] said plurality of zones with different wire [permeability] permeabilities comprises a plurality of zones [,] in which each zone [having] has a maximum extension of less than about 5 mm.

43. (Amended) The tissue paper former in accordance with claim 40, wherein said former comprises a crescent former, and wherein said outer belt comprises said at least one dewatering wire with [zonally varied] said plurality of zones with different wire [permeability] permeabilities and said inner belt comprises a felt belt.